

BXP User Manual



© OPEN General™
All Rights Reserved.

No part of this publication may be reproduced, read or stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without prior written permission of OPEN General.

This document is produced in Australia.

OPENXpress™ and *OPENWare™* are trademarks of OPEN General. All other trademarks are the property of their respective owners.

The information in this document is furnished for informational purposes only, is subject to change without notice, and should not be construed as a commitment by OPEN General. OPEN General assumes no liability for any errors or inaccuracies that may appear in this document.

OPEN General™
2 Shearson Crescent
Mentone 3194
Victoria
Australia
Phone: 61395855113
Fax: 61395855441
<http://www.opengeneral.com>

Table of Contents

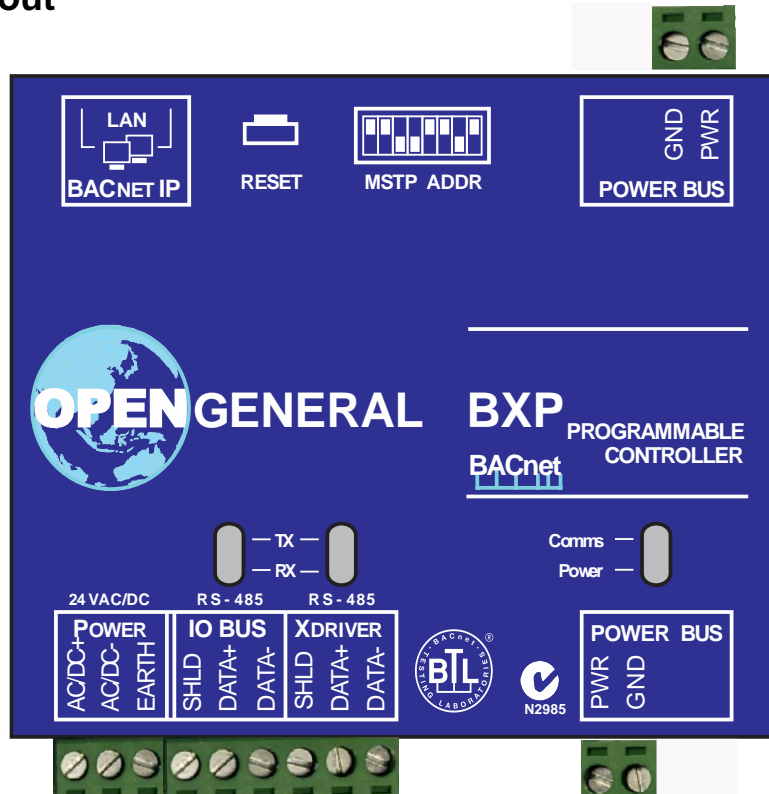
TABLE OF CONTENTS	3
1 INTRODUCTION	4
2 SPECIFICATION	6
2.1 Electrical	6
2.2 Environmental	6
2.3 Mechanical	6
2.4 Regulatory Compliance	7
3 POWER CONNECTION	8
3.1 Building Ground Requirements	8
3.2 Lightning Protection	8
4 COMMUNICATION CONNECTION	10
4.1 Specification	10
4.2 Jumper Settings	11
4.2.1 Factory Default Dip Switch Settings	11
4.2.2 BACnet IP Mode	11
4.2.3 MSTP Mode	11
5 BXP SETUP	12
6 TROUBLESHOOTING	14
7 WARRANTY	15

1 Introduction

The OPEN General BXP is a native BACnet IP processor module that supports expansion input/output modules, a Modbus communications driver and can also be optionally configured to reside on a MSTP communications leg ion and energy management applications. The key features of BLINK-R are as follows:

- Native BACnet IP
- Ethernet port for BACnet/IP communication.
- Universal Power Supply Range (24VAC/DC \pm 10%).
- On board Modbus communications interface.
- Input/Output expansion bus for connection to Open General's I/O modules
- Optional functionality for device to reside on MSTP channel without BACnet IP.
- LEDs provide simple troubleshooting information and indicate communication activity for all ports.

Board Layout



Feature	Description
Power	Power to the controller (See section on Power)
Reset Button	Resets the BXP Processor (same as power cycling)
BACnet IP	Native BACNet IP Ethernet connection
Mode Dip Switches	Dip switches set BACnet IP, MSTP and factory default
I/O Power Port	Auxiliary Power port for Additional Open General Input/Output Modules
Modbus Port	RS485 Modbus communications port
IO BUS	RS485 I/O BUS communications port
I/O Modules/ Modbus Rx/Tx LEDS	Indicates receive and transmit frames for I/O Modules/Modbus communication Rx LED flashing green implies receiving data and Tx LED flashing yellow implies transmitting data

2 Specification

2.1 Electrical

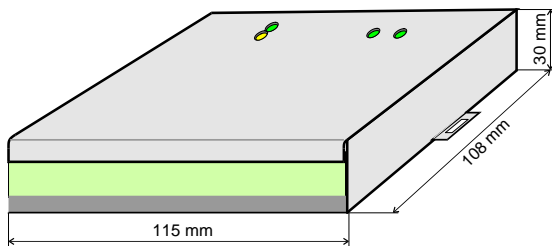
Supply Voltage	24VAC \pm 10%, 50/60HZ 18-36VDC \pm 10%, 50/60HZ
Power Consumption	1.5 VA (without expansion modules) Add 1 VA for each Digital Output expansion module Add 3 VA for each analogue output expansion module

2.2 Environmental

Operating Temperature	-10°C to 70°C (14°F to 158°F)
Relative Humidity	10-95% RH (Non condensing)

2.3 Mechanical

The overall dimensions of the BXP as follows:



The BXP can be mounted on TS-35 Din Rail

2.4 Regulatory Compliance

C Tick AS/NZS CISPR 22:2006

FCC Class A Notice

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

3 Power Connection

The BXP is operated via an individual external 18-36 VDC or 24 VAC, 50 or 60 Hz, source. Maximum power consumption of the controller does not exceed 2 VA without any expansion modules connected to it. Add 1 VA for each digital output expansion module and 3 VA for each analogue output expansion module. This power supply is connected via two terminals located on the Power/Communications connector.

An internal power converter creates the necessary DC voltages to supply power to the expansion modules. The BXP has internal surge, over voltage, and current protection circuits which are normally recovered one minute after the device is powered down and / or disconnected from the circuit which caused the fault.

3.1 Building Ground Requirements

Be sure that all equipment is grounded to true Earth ground. True Earth ground protects the equipment from transients and other power surges in the area. OPEN General cannot guarantee that the controller system will operate as documented without a properly grounded installation.

When lightning strikes in the area of the installation, it drastically changes the potential of the Earth. Since properly grounded units respond to changes in potential more rapidly than poorly grounded electrical systems, a poorly grounded building tries to reach ground through the controls system. The surge of current can destroy electronic components on the controller board. Surges of much lower potential than lightning also impact the reliability of the equipment.

3.2 Lightning Protection

Although surge protection circuits are built into the board to protect against power line transients, this protection is not sufficient to protect against lightning. Lightning arresters are required at each point where communication cables enter or exit a building.

**Warning**

Do not remotely ground any part of the sensor wiring. Remote grounds connected to the controller return terminal could make the controller operate incorrectly or damage the equipment. The signal return is not true earth ground. It is an electronic reference point necessary to interpret the sensor properly.

It is recommended that you run input wiring in a conduit separate from AC power or output wiring and avoid long wiring runs.

For reliable input operation, follow these input wiring guidelines:

- Never lay wires across the surface of the printed circuit board.
- Wires should never be within 1 in. or 25 mm of any component on the printed circuit board.
- Use shielded input wire.
- Terminate the shield of the input wires at one end of the run only, preferably at the end where your controller is located.
- Be careful when stripping wire not to drop small pieces of wire inside the cabinet.
- Don't run your input wiring in the same conduit with AC power.
- Don't run your input wiring in the same conduit with your output wiring.
- Do not externally ground any input connected to the Controller. This may damage the unit. Signal return terminals are not connected to Earth Ground

4 Communication Connection

The BXP has an Ethernet LAN port, two RS485 communication ports which allow Modbus and I/O Module communications and power ports to support additional Open General Input and Output expansion modules.

4.1 Specification

I/O BUS PORT	RS485
Speed	19200,38400, 57600,76800 baud, parity on/off
Bus Length	1,220 m (4000 ft) or 32 nodes on the same network lege. An RS485 repeater is required to extend the length or the number of nodes
Bus Media	Twisted Pair Shielded

MODBUS PORT	RS485 RTU
Speed	2400,9600,19200,38400, 57600,76800 baud, parity on/off
Bus Length	1,220 m (4000 ft) or 32 nodes on the same network lege. A RS485 repeater is required to extend the length or the number of nodes
Bus Media	Twisted Pair Shielded

Ethernet	Ethernet
Speed	10/100 Mb
Bus Length	Maximum length between two nodes 327ft (100 meters). The maximum length of the network segment 1635ft (500 meters).
Bus Media	RJ-45

4.2 Jumper Settings

The BXP uses mode dip switches in order to factory reset the device and set it to BACnet IP or MSTP mode operation.

4.2.1 Factory Default Dip Switch Settings

Setting all of the dip switches to the OFF state (positions as detailed below) and power cycling the device OR pressing the reset button will factory reset the device. Factory reset will

- * Clear all programs and configurations that have been previously stored in the device
- * Reset any pre configure IP address back to IP address 192.168.20.222



4.2.2 BACnet IP Mode

As the BXP can operate at the BACnet IP communications level or on MSTP communications bus level, dip switch 8 is used to determine whether the device is going to operate as an BACnet IP level device or an MSTP level device. If switch 8 is set ON, the BXP will operate as a BACnet IP device.

4.2.3 MSTP Mode

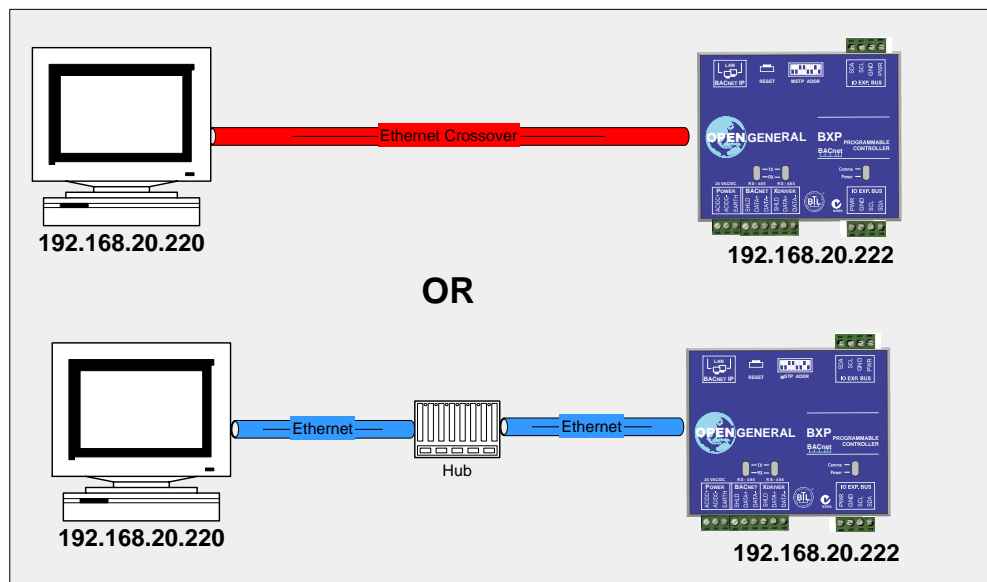
If the BXP needs to be placed on an MSTP communications leg, switch 8 needs to be set in the OFF position and the remaining dip switches 1 thru 7 need to be set to the MSTP address you wish the device to have.

NOTE: The BXP cannot currently operate in simultaneous BACnet IP and MSTP modes. It can only operate in one of these modes.

5 BXP Setup

In order to configure the BXP to the desired parameters before use, the configuration is done via login into the web configuration page. To setup the BXP the following equipment is required:

- PC or Laptop
- Crossover cable if PC connecting directly to the router OR Ethernet Hub with standard Ethernet cable. Newer computers have auto sensing capabilities so either cable may work.



Step 1: Go to your Control Panel via the start menu on the lower left of your desktop then click on, “Network and Internet” settings, then click on “Network and Sharing Center”, then click on “View network status and tasks”, then click on “Local Area Connection”, then click on “Properties”, then select “Internet Protocol Version 4”, then click properties, Set your PC’s IP Address to **192.168.20.220** with a subnet mask **255.255.255.000**

Step 2: Open browser and enter the following URL: <http://192.168.20.XXX> where **XXX = 100 + last 2 digits of the BXP serial number**. For example if the serial number is **1349015** then the number would be 100 + 15 = 115. The BXP’s default IP address will be 192.168.20.115.

Step 3: From the browser interface change the required settings in the entry field to configure the BXP based on local requirements for IP Address and subnet mask as per below:

BXP controller BACnet/IP Settings

Parameter	Value	Description
IP	192.168.20.109	IP address of the Controller
Network Mask	255.255.255.0	Subnet mask
Default Gateway	192.168.20.1	IP address of default gateway
UDP Port	47808	BACnet/IP UDP port number
DNET		Directly connected network number
MAC	00:20:4B:C0:74:91	MAC address of the Controller
SerNum	1349009	Network ID

Save

Parameter	Description
IP	IP Address of the BXP. It must be in the same subnet as the user interface
Subnet Mask	Subnet mask
Default Gateway	IP Address of the default gateway
UDP Port	BACnet/IP UDP port number. Leave it as default 47808
DNET	Leave Blank. This field is not required.
MAC	The Ethernet machine address (cannot be modified)
SerNum	The serial number of the device can be modified if it needs to adapt to any multiple site numbering convention.

Click on Save to save the modified data.



Warning

Note down the IP address of the BXP as it is required to log back into the configuration page. If this is lost it can be defaulted back to original factory IP Address as detailed above

6 Troubleshooting

<p>BACNet IP Module leds not flashing</p>
<ol style="list-style-type: none"> 1. Check the LAN Cable. 2. RESET BXP. 3. Power Cycle the BXP.
<p>BACNet MSTP or MODBUS Tx or Rx Light is Blinking</p>
<p>If only Tx or Rx light is blinking, then there is error in the IO bus or Modbus communication lines. Check the following to resolve the problem:</p> <ul style="list-style-type: none"> • Check the wiring on the communication terminals. Make sure Data+ and Data- are not reversed. • Make sure the IO BUS expansion module addresses all unique. Check the dip switch address on each device. Each device must be have a unique address between 0-8. • For Modbus, Check the baud rate settings in OpenXpress. The Modbus factory default setting is 9600 baud even 1 stop.
<p>Can not Remember IP Address of the BXP</p>
<ul style="list-style-type: none"> • If already connected to the BMS network, run Wireshark and prompt a command through the user interface to read data from the field controller. Check the response in Wireshark, the Response IP Address is the address of the BXP. • Check the Openxpress network settings for the BXP and it will show the address. • If not on the network or OpenXpress is not available, reset IP device back to factory default by setting all dip switches to their off position and power cycling the device or pressing the reset button. NOTE: Any programs or previous settings on this device will be cleared.

7 Warranty

OPEN General warrants this product to the original purchaser for 1 (one) year from the product shipping date. Product returned to OPEN General for repair is warranted for one year from the date the repaired product is shipped back to the purchaser or for the remainder of the original warranty period, whichever is longer.

If the product fails to operate in compliance with its specification during the warranty period, OPEN General will, at its option, repair or replace the product at no charge. The customer is responsible for shipping the product and OPEN General assumes no responsibility for the product until it is received.

OPEN General limited warranty covers products only as delivered and does not cover repair of products that have been damaged by abuse, accident, disaster, misuse or incorrect installation. User modification may void the warranty of the product if the product is damaged by the modification, in which case this warranty does not cover repair or replacement.

In no event will OPEN General be liable for any damages including loss profits, lost savings or other incidental or consequential damages arising out of the use or inability to use the product even if OPEN General has been advised of the possibility of such damages, or for any claim by any party other than the purchaser.

OPEN General BXP User Manual

Version: 3

